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ABSTRACT

Social studies instruction will improve if social studies educators cooperate with computer professionals to develop ways of using the computer in the classroom. Objections of many social studies teachers to computers are based on experiences in which computers were used to intimidate consumers, implement poorly conceived projects, and promote rigid instructional approaches. If social studies teachers and computer professionals work together to provide a balanced program in processing information, they can extend skills of data collection, storage, retrieval, and analysis. Examples of computer projects of special interest to social studies teachers include the PLATO system, which is especially useful for studying population geography, and computer based resource units. Specific advantages of using computer instruction in the classroom include individualization of instruction, broadening of teachers' bases of information by allowing them to search various computer bases such as Educational Resources Information Center (ERIC), diagnosis of student needs, assignment of instructional sequences, evaluation of programs, locating information, data processing, and enhancing educational games and simulations. (DB)

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USING THE COMPUTER IN THE SOCIAL STUDIES CLASSROOM

By James Hantula

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Using the Computer in the Social Studies Classroom

James Hantula

For many social studies teachers, the computer is an ogre of our times. Its users are often viewed as poachers in the social studies game preserve. According to some game wardens, users set traps which mangle what they hope to capture. Other users set traps for deer, but catch ants; a few set traps which have no springs. Game wardens oppose use of the computer to put things over on people. In a word, they oppose cybercrud--i.e., using the computer for intimidation of consumers, implementation of poorly conceived projects, and promotion of particular approaches because "the computer has to have it that way."

Curiously, the game warden's point of view is shared by many computer professionals. More aware, they know that cybercrud results from inappropriate ways of using a computer. A computer is an information-disseminating machine. Like the written and spoken word, it can be used to spread the errors of the mindless. "Garbage in, cybercrud out," is a maxim of computer professionals. To avoid cybercrud in social studies education, professional help is required. With the help of computer professionals, social studies teachers can develop a well formulated perspective on the computer.[1]

Together, computer professionals and social studies teachers can provide a balanced program in processing information. Such a program provides opportunities for extending skills of data collection, data storage, data retrieval, and data analysis. To extend

map skills, for example, a balanced program provides opportunities for field and library work, map making, map reading, and map interpretations.[2] By using a computer, skills can be more efficiently extended. More important, use of a computer makes learning on one's own about the world a possibility of social education.

Towards this end, several research projects were initiated by computer professionals around 1960. These projects led to development of systems including: Computer Assisted or Computer Aided Instruction (CAI), Computer Based Instruction (CBI), and PLATO. Of these systems, PLATO represents an advanced state of current art. Applied to social studies, PLATO has proven useful for extending skills in population geography. During a study of world food and population problems, for example, PLATO provides opportunities for a user to vary food supply and observe changes in population growth. Changes are indicated by graphs on a viewing screen.[3]

Another project of special interest to teachers resulted in development of computer based resource units. The purpose of this continuing research is to aid individualization of instruction by providing teachers with pre-planning suggestions in the form of a resource unit. In using the computer, a teacher specifies appropriate goals, strategy, and student characteristics. The computer responds with suggestions of objectives, outline of content, student activities, recommended materials, and measuring devices. Presently available resource units range from kindergarten through college levels.[4]

More well known is use of a computer to retrieve pertinent

research. Especially useful is a search of documents on deposit at sixteen Educational Resources Information Centers (ERIC) scattered throughout the United States. Of these centers, the ERIC Clearinghouse for Social Studies/Social Science Education and the ERIC Clearinghouse on Information Resources contain most citations of interest. Assistance in using ERIC is readily available from local, state, and professional agencies.[5] At the annual meeting of the National Council for the Social Studies, for example, ERIC searches are usually available.

Clearly, computer professionals have found a place in elementary and secondary education. They have convinced educational leaders to use a computer as a means to administer a school system better and as a tool to foster learning. The trend is toward more fully using a computer in administration and instruction. In secondary education, for example, a recent study of schools using a computer indicated about one-third are using it for administration and instruction. About one-half are using it for administration; about one-sixth are using it for computer assisted instruction.[6]

Over the past ten years, a variety of computer applications have been implemented.[7] In Philadelphia, the School District is using a computer for managing and assisting instruction. To manage instruction more efficiently, a computer is used to diagnose student needs, assign instructional sequences, and evaluate progress. To assist instruction, a computer is used for learning mathematics, science, social studies; locating information in career and consumer education; and extending skills in reading and in a junior high school course entitled "Computer Literacy."[8]

Other schools use a computer in similar ways.

Individual pioneers in using a computer for instruction are many. Some use a computer for data processing. Others use it for extending skills, playing games, simulations, and other creative uses. Geography teachers, in particular, use a computer effectively as a teaching device. One distinctive application is entitled "The Salesman on the Beach." In this application, two secondary students play a location game. They act as beer salesmen at Surfside Beach, a beach two miles in length with an uneven distribution of population. The player who makes more profit is the winner of the game.[9]

Quite different is the game of "Concen"--a game for two middle school students. In this game, players view a mystery picture and questions on the geography of Africa. Each correct answer transforms a part of the mystery picture. The player who answers more questions correctly is the winner of the game. A different application of the same data is the game of "Graphs." "Graphs" extends skills in interpreting data by posing questions and displaying a bar graph. If a user answers a question incorrectly, a bar graph is displayed. By reading the bar graph, a user determines the correct answer.[10]

In Western and non-Western studies, use of a computer for simulations is increasingly popular. In Western studies, a recent effort is a computerized version of the board game "Ghetto." "Ghetto" was developed to sensitize users to the emotional, physical, and social world inhabited by the poor. Users adopt a ghetto lifestyle and experience the social pressures associated with the particular life style.[11] In Asian studies, the "Great Wall"

simulates a confrontation between a Chinese force defending the Great Wall and a threatening force of nomadic tribesmen. Users consider the way in which diverse factors are closely interrelated in making Chinese policy.[12]

In addition to playing games and simulations, a computer can be used effectively for extending skills which are a major responsibility of social studies education. These skills include reading social studies materials, using chronology, and map skills. Illustrative of an interactive use of a computer for extending skill in understanding social studies terms and chronology is WORDMZ. WORDMZ is a program for generating a word or number maze. It stimulates recognition and recall by camouflaging dates and terms. Relevance of the maze is determined by user choice of words, dates, and reading level.[13]

Extending map skills is possible with several computer programs. Of these SYMAP is probably the most widely used. SYMAP produces both choropleth and isarithmic maps from either gridded or irregularly gridded data.[14] Another program of interest is CHORMAP. CHORMAP has been used to generate maps depicting distribution of major crimes in the United States.[15] Maps produced by both SYMAP and CHORMAP are useful devices for extending skills in processing geographic information about spatial variation. They are also exceptionally effective devices for extending general skills of inquiry.

Crucial to the success of these computer applications is an opportunity for a user to work directly with a computer. Typically, user interacts with a computer at a terminal. A terminal serves two functions: (1) to convert electrical signals from a user

to a form which the computer can understand, and (2) to convert electrical signals from the computer to a form which a user can understand. A user imputs information by typing or pressing a button on a cathode ray tube console. The computer's response is immediate and exciting. Student users are readily "turned on" by the computer.

Equally crucial is the choice of computer language for programming and communicating to a user. A variety of computer languages are employed in programming. Of these languages, the Beginner's All-purpose Symbolic Instruction Code (BASIC) is increasingly popular due to its ease of learning and suitability for many applications.[16] In Philadelphia, for example, BASIC was finally chosen as the major computer language to be used in the School District. Depending upon the purpose of a particular program, virtually any communication to a user by the computer is translated into functional English.

Unfortunately, programs are not easily transported from computer to computer. Programs used for interactive games and simulations on a Hewlett-Packard 2000 computer, for example, require rewriting before being used on a different computer. Similarly, programs used for retrieval of resource units and ERIC searches are designed to be run on particular computers. Nevertheless, a local computing center will probably have access to several computers which can service the needs of most users. Further, many computer stores have micro-computers for sale at a relatively low cost.[17] Simple social studies learning activities can be devised for use with these computers.

Despite "hook-up" problems and the ever-present dangers of

cybercrud, the continued growth of computer based education seems assured. Within the next decade, most schools will have access to a computer. Uses of a computer will continue to vary according to needs. Computing will become recognized as a basic skill in the genuinely new social studies. Use of a computer will extend student skills in processing social information. In turn, these skills will aid a student in learning about the world on one's own.[18] In the future, game wardens will post "No Cybercrud" rather than "No Trespassing" signs in the social studies game preserve.

Notes

1. Peter H. Martorella and Dixie Kohn contend that social studies educators need to develop an informed, well-formulated perspective on the computer as it relates to social studies education in "Computer-Related Materials in the Social Studies/Social Sciences," Social Education, 34:8, December 1970, pages 899-908.
2. See the discussion by William D. Pattison "The Educational Purposes of Geography" in the Yearbook of the Nation Council for Geographic Education (Belmont, California: Fearon, 1971), Chapter 2, pages 21-22.
3. This use of PLATO is discussed further by Pam Husband in "A Population Educator Named PLATO," Intercom, 5:1, January 1977, pages 6-7. Other uses and background information on PLATO is provided by Donald L. Bitzer "Computer Assisted Education," Theory Into Practice, 12:3, June 1973, pages 173-178. PLATO and other systems are also discussed by C. Victor Bunderson and Gerald W. Faust in "Programmed and Computer-Assisted Instruction," 1975 Yearbook of the National Society for the Study of Education (Chicago: NSSE, 1976), Part I, Chapter 3.
4. Recent comment on computer based resource units is made by Robert S. Harnack in "Ten Years Later: Research and Development on Computer Based Resource Units," Educational Technology, 26:11, November 1976, pages 7-13.
5. In Iowa, the Iowa Network for Obtaining Resource Materials for Schools (INFORMS) offers this service. A teacher requests

information from an INFORMS representative. The representative contacts the Iowa Department of Public Instruction (DPI). The DPI conducts an ERIC search and returns abstracts or microfiche copies of documents to the teacher via the field representative.

6. These findings are from a study conducted by William S. Bukoski and Arthur L. Korotkin in "Computing Activities in Secondary Education," Educational Technology, 16:1, January 1976, pages 9-23.

7. Many computer applications are annotated in Anastasia C. Wang, Editor, Index to Computer Based Learning (Milwaukee: University of Milwaukee, 1976). Also see: Robert J. Seidel, Editor, Computers and Communications (New York: Academic Press, 1977).

8. The Philadelphia experience is described by Sylvia Charp and H. H. Altschuler in T H E (Techological Horizons in Education) Journal, 3, November 1976, pages 10-11. The "Whole School" approach to computer use is described in Illinois Series on Education Applications of Computers, #1, March 1975, available in ERIC as ED 138 278.

9. This game was developed during research which compared computer-assisted and lecture instruction. See Robert S. Ellinger and Phillip Frankland in "Computer-Assisted and Lecture Instruction," Journal of Geography, 75:2, February 1976, pages 109-120. Other research on the effectiveness of CAI is reviewed by Judith Edwards, Shirley Norton, Sandra Taylor, Martha Weiss, and Ralph Dusseldorp in "How Effective is CAI," Educational Leadership, 33:2, November 1975, pages 147-154.

10. See James Hantula "Concen," Journal of Geography, 76:3, March 1977, pages 91-94, for a discussion of "Concen" and "Graphs."

11. For a more complete description of Ghetto, see Judy Edwards "Walking in Someone Else's Shoes," in Pipeline, 3:1, Fall 1977, pages 28-29. An example of a simulation in American studies for middle grade students is OREGON, a simulation of a trip over the Oregon Trail in 1847. OREGON was developed at the Minnesota Computing Consortium, 1925 Sather Street, Lauderdale, Minnesota 55113.

12. The Great Wall and other uses of the computer are discussed by Robert G. Shafer in "Computer in the (History) Classroom," AHA Newsletter, 15:7, October 1977, pages 9-10. Also see: Daniel L. Klassen "Computer Simulation in the Social Sciences/Social Studies," April 1973, ED 087 429; and Marian Visich, Jr. and Ludwig Braun "The Use of Computer Simulations in the High School Curricula," January 1974, ED 089 740.

13. WORDMZ is described more fully in James Hantula "WORDMZ," The History Teacher, 10:4, August 1977, pages 587-594.

14. SYMAP is described by James W. Cerny in "Use of the SYMAP Computer Mapping Program," Journal of Geography, 71:3, March 1972, pages 167-174.

15. See Keith D. Harries "The Geography of American Crime, 1968," Journal of Geography, 70:4, April 1971, pages 204-213. For a simulation of crime in a typical American city, see CRIMEX developed at the Northwest Regional Educational Laboratory,

500 Lindsay Building, 710 S.W. Second Avenue, Portland, Oregon 97204.

16. Many interactive social studies programs in BASIC are included in the Time-Shared Basic/2000 Contributed Library Handbook (Cupertino, California: Hewlett-Packard, 1974), Five Volumes.

17. Some of these stores are advertised in Creative Computing, 1974, published by Creative Computing Press, P.O. Box 789-M, Morristown, New Jersey 07960. Several books on using the computer are also available from Creative Computing Press.

18. Whether a student who can use a computer to learn on one's own will learn about ways of the world deemed important by social studies teachers is a different question. Anthony G. Oettinger tries to answer this question in Run, Computer, Run (Cambridge: Harvard University Press, 1969), Chapter 3. More darkly, Joseph Weizenbaum claims "We can count, but we are rapidly forgetting how to say what is worth counting and why." Computer Power and Human Reason (San Francisco: Freeman, 1976), page 16.